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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,599	11/09/2001	Koji Morita	36856.584	9173

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EXAMINER

TUGBANG, ANTHONY D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/036,599

Applicant(s)

MORITA ET AL.

Examiner

A. Dexter Tugbang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 12-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-19 is/are rejected.
- 7) ☒ Claim(s) 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/412,204.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/04/04.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to First Office Action***

1. The applicant(s) amendment and response filed on 11/18/04 has been fully considered and made of record.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. The prior art rejections are hereby repeated below merely for the applicant(s) convenience.

***Claim Rejections - 35 USC § 102***

3. Claims 12 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Daidai et al 5,593,721.

Daidai discloses a method of manufacturing a piezoelectric component comprising: forming an unhardened first elastic material 10 partially on at least a pair of end portions of a piezoelectric element 1, the pair of end portions including edge portions of the piezoelectric element; hardening the first elastic material (see col. 4, lines 15-17); forming an unhardened second elastic material 11 on an entire circumference of the piezoelectric element and the first elastic material; hardening the second elastic material (see col. 4, lines 23-31); forming an unhardened outer-cladding resin 13 on the entire circumference of the second elastic material covering the piezoelectric element and the first elastic material; and hardening the outer-cladding resin (see col. 4, lines 56-61).

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Regarding Claim(s) 19, Daidai further teaches forming the outer-cladding resin by dipping the piezoelectric element into a fluid state of the outer-cladding resin (see col. 4, lines 59-62).

***Claim Rejections - 35 USC § 103***

4. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daidai et al.

Daidai discloses the claimed manufacturing method as previously discussed above, and further including that the unhardened first elastic material and the unhardened second elastic material are made of different compositions of materials. The amount of the thixotropic index that the unhardened first elastic material is larger than the unhardened second elastic material, or that the thixotropic indexes of both the unhardened first and second elastic materials being larger than 1.7, are each considered to be an effective variable within the level of ordinary skill in the art of forming unhardened first and second elastic materials in a piezoelectric component. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided such thixotropic indexes, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

5. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daidai et al in view of the Applicants Admitted Prior Art, referred to hereinafter as AAPA.

Daidai discloses the claimed manufacturing method as previously discussed above. Daidai does not teach that the first elastic material is formed of silicone rubber in which the piezoelectric element is dipped in a fluid state of the first elastic material, and that the second

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elastic material is formed by dipping the piezoelectric material into a fluid state of the second elastic material. However, these features above are conventional and notoriously well known in the art of manufacturing piezoelectric components. The AAPA (specification, pages 1-2) discloses the above conventional features.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Daidai by including the conventional features taught by the AAPA, to at least realize the advantages of packaging and encapsulating the piezoelectric component.

#### ***Response to Arguments***

6. The applicant(s) arguments filed 11/18/04 have been fully considered, but have not been deemed to be found as persuasive.

In regards to the merits of Daidai et al, the applicant(s) believe that Daidai does not teach “forming an unhardened...elastic material” (lines 3-6 of Claim 12).

Within this first step, the applicant(s) believe that the first elastic material, read as the organic silicon compound 10, is not formed on at least of a pair of end portions of a piezoelectric element 1 where the end portions include an end portion of the piezoelectric element. The examiner most respectfully disagrees. The claimed relationship of the “piezoelectric element” is a very broad limitation because the examiner has read the “pair of end portions” as the top surface and bottom surface of the piezoelectric element 1. This top and bottom surface can be read this way because each surface is an end portion and the claim does not recite any other surfaces of the piezoelectric element that would exclude the top and bottom surfaces from being

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read as a pair of end portions. Furthermore, within each top and bottom surface, an “edge portion” is read as the portion of the top surface and the portion of the bottom surface occupied by, or in direct contact with, the first elastic material (compound 10). In other words, each end portion (top or bottom surface) of the piezoelectric element includes an edge portion (center portion) occupied by the unhardened elastic material. So yes, the central portion of the piezoelectric element can be read as the edge portion.

Secondly, the applicant(s) believe that the first elastic material is not hardened. Again, the examiner disagrees because the step of “hardening the first elastic material” is very broad in the sense that the step does not require how the first elastic material is hardened. While it is true that the first elastic material (compound 10) is dispersed through film 11 (col. 3, lines 43-45) as the applicant(s) have noted, it is the examiner’s position that it is prior to this dispersion that the first elastic material (compound 10) is considered to be hardened. It is noted that the claim does not exclude this dispersion or does not exclude what the final state of the first elastic material is to be. Daidai teaches that the first elastic material (compound 10) is solid at room temperature (see col. 4, lines 15-16) and that the first elastic material does not melt when the second elastic material 11 is formed (see col. 4, lines 30-35). So the examiner’s position is that the first elastic material is hardened to the extent that it is solid and does not melt either before or during the formation of the unhardened second elastic material.

In summary, it appears that the applicant(s) are arguing more specifically than that which is claimed and further limitations are needed in the claims to clarify the above aspects and avoid Daidai et al.

***Allowable Subject Matter***

7. The following is a statement of reasons for the indication of allowable subject matter.

Regarding Claim(s) 20, as Claim 20 includes all of the limitations of Claim 12, the prior art does not teach that the total thickness of the first and second elastic materials at the edge portions of the piezoelectric element is larger than a difference between the maximum contraction amount of the outer-cladding resin and a maximum contraction amount of the piezoelectric element.

8. Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

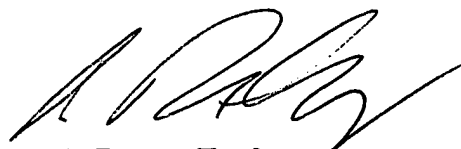
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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 703-308-7599.

The examiner can normally be reached on Monday - Friday 7:00 am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**A. Dexter Tugbang**  
**Primary Examiner**  
**Art Unit 3729**

adt

January 18, 2005